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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,306	09/13/2000	Katsuaki Abe	P19976	7749

7055 7590 02/17/2004

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER
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BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/661,306

Applicant(s)

ABE ET AL.

Examiner

Kevin M Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 20-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

1. This office action, in response to the amendment filed 12/10/2003, is a non-final office action.

***Response to Arguments***

2. Applicant has cancelled the previously pending claims and added new claims 20-35. Rejections of these claims are stated below.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 20-29, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Wada (US 5,602,879).

Regarding claims 20 and 33, Wada discloses a reception method and apparatus as shown in figure 11. A signal is received and sampled at a rate in the A/D converters 7 and 8. The information is correlated and according to a correlation judgment 42, the phase of the A/D sample timing is shifted in phase shifter 96. This new phase shifted timing is used to sample newly received data. The correlation detection circuitry 40 will make an additional determination if the sample timing needs to be shifted an additional amount according to the previous sample timing. The shifting of the phase of the

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sample timing will be an amount of phase shift that is necessary to achieve the desired result in the correlation detection circuitry.

Regarding claims 28, 29 and 34, Wada discloses a reception method and apparatus as shown in figure 11. A signal is received and sampled at a rate in the A/D converters 7 and 8. The information is correlated and according to a correlation judgment 42, the phase of the A/D sample timing is shifted in phase shifter 96. This new phase shifted timing is used to sample newly received data. The correlation detection circuitry 40 will make an additional determination if the sample timing needs to be shifted an additional amount according to the previous sample timing. The shifting of the phase of the sample timing will be an amount of phase shift that is necessary to achieve the desired result in the correlation detection circuitry. The phase shift receives a correlation value and outputs a corresponding phase shift. This information must be stored in the phase shift 96 so that each of the plurality of possible correlation detection circuit outputs corresponds to a certain phase shift.

Regarding claims 21-27, as shown in figure 11, the phase is shifted (switched according to the correlation circuitry 40 to achieve an error free output signal.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wada (US 5,602,879) in view of Kanemasa et al (US 4,730,343) further in view of Zhang et al (US 6,037,986).

Regarding claim 30, Wada discloses the apparatus disclosed above. Wada does not disclose a tap coefficient table used for canceling ISI. Kanemasa discloses an apparatus and method for eliminating ISI. A receiver detects, samples data and an adaptive filter having taps corresponding to a length over which ISI has an influence is installed to generate estimated ISI, so that the actual ISI occurring during the transmission of pulses over a channel may be suppressed. The tap coefficients of the filter are sequentially corrected or updated by determining the correlation between the predicted residual ISI of a received signal (column 1, lines 12-19). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the interference reducing system of Kanemasa into the receiver of Wada to remove ISI and allow the transmitted data to be recovered properly and free of interference.

The combination of Wada and Kanemasa do not disclose using a look up table to store possible tap coefficients. Zhang discloses storing the possible tap coefficients in a look up table (column 12, lines 27-33). This allows the tap coefficients to be accessed quickly since computations for figuring out the correct tap coefficients in response to a correction signal have been precomputed. This allows the signal to be filtered quicker than systems without the tap coefficient table. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Zhang

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into the receiver of the combination of Wada and Kanemasa for the reason stated above.

5. Claims 31, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanemasa et al (US 4,730,343) in view of Zhang et al (US 6,037,986).

Regarding claims 31, 32 and 35, Kanemasa discloses an apparatus and method for eliminating ISI. A receiver detects, samples data and an adaptive filter having taps corresponding to a length over which ISI has an influence is installed to generate estimated ISI, so that the actual ISI occurring during the transmission of pulses over a channel may be suppressed. The tap coefficients of the filter are sequentially corrected or updated by determining the correlation between the predicted residual ISI of a received signal (column 1, lines 12-19). Kanemasa does not disclose using a look up table to store possible tap coefficients. Zhang discloses storing the possible tap coefficients in a look up table (column 12, lines 27-33). This allows the tap coefficients to be accessed quickly since computations for figuring out the correct tap coefficients in response to a correction signal have been precomputed. This allows the signal to be filtered quicker than systems without the tap coefficient table. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Zhang into the receiver of Kanemasa for the reason stated above.

### ***Conclusion***

**Any response to this action should be mailed to:**

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Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314, (for formal communications intended for entry or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.



Kevin M. Burd  
PATENT EXAMINER  
2/13/2004